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# PATENT SPECIFICATION

DRAWINGS ATTACHED

1049.811



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Int. Cl.:—B 66 f

## COMPLETE SPECIFICATION

### Shelf Distribution Equipment

5 We, DEMAG-ZUG G.m.b.H., a German Company, of Ruhrstrasse, Wetter-Ruhr, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to shelf-distribution equipment.

10 The usual shelf-distribution equipment has load-bearing members on which the pallets or other containers are placed, so that these can be carried by the load bearers into or out of a set of shelves. The equipment mostly includes elevator standards, suspended from overhead trolleys, the load bearer of each standard having a lifting container and in many cases an operator's cage. The elevator standards may also travel along the floor, however, for which purpose they are equipped to run on rails. It has also been proposed that an elevator standard should be equipped with a vertically travelling driver's position and that in front of this position there should be a goods counter, fixed to arms with a space between for the driver's protection. Before the driver began his upward journey, the goods counter was first raised to the level of a normal work-table, after which the driver's position and the counter were hoisted together.

30 Contrary to these existing or proposed shelf distribution equipments, the present invention aims at working the shelves with collective containers. Into these collective containers are placed the goods removed—to some extent in the form of a primary selection—from the shelves, the shelves preferably having open-ended compartments for through service. The collective containers are then run to a position at which the goods are finally distributed item by item. Here again, distribution should be mechanised as far as possible.

The invention relates to a shelf distribution unit with a travelling collective container,

[Price 4s. 6d.]

an attendant's position being provided to travel up and down on runners secured to the frame of the container. The collective container should preferably be in the form of a set of shelves, sub-divided into compartments corresponding to those of the supply shelves, so that goods can be taken from the supply shelves simply, and without confusion. The container shelving may form a rectangular fixture, but may equally well be a circular fixture provided to rotate on a vertical axis.

55 The attendant's position is guided by runners provided at both ends of the shelf frame. The movement are controlled by lifting gear fitted at the top of the container unit. Traversing equipment is installed above the container unit and is provided with driving power. The container unit may also be provided with guides at floor level.

65 Running past the ends of all the rows of shelves are crane tracks, normally overhead, bearing a traversing trolley on which several lengths of girdering are mounted. These lengths of girder are similar in cross-section to those of the individual tracks between the shelf fixtures, so that the container units can be run on to these girders on the traversing trolley.

70 Beyond the crane tracks are more of the individual tracks, preferably provided in particular positions, so that the container units can be brought up to these pre-determined positions by the girder carriers on the traversing trolley. Packing tables or conveyor belts are installed alongside these pre-determined positions. This is where the goods are sorted into individual items. The sorting is facilitated by the fact that container trolleys moved by telescopic action are fitted to the attendant's position.

85 One construction of the unit according to the invention is diagrammatically illustrated, by way of example, in the accompanying drawings, in which:

Price 33s.

Figure 1 is a perspective drawing of the shelf distribution equipment and its rail suspension;

5 Figure 2 is a corresponding side elevation, and

Figure 3 shows the attendant's position as seen from above, with the container trolley which can be run out by telescopic action.

10 In the example shown, the collective container is a set of shelves 1. To the container unit frame 3 are fitted runners 2, which guide the attendant's position 4. The guide rollers and hoisting ropes or chains are not shown. The attendant's position has a guard 4a, which

15 surrounds the attendant.  
Above frame 3 is mounted a motor 5, along with its hoisting gear. Here too is mounted the traversing mechanism 6 of the container unit, by means of which the unit can be run along track 7 on rollers 8. The individual track is suspended over the aisle between the sets of shelves. As shown in Figure 2, it is also possible for two such tracks to be accommodated along with their travelling container units, in each aisle. The shelves are numbered 9. In addition to the aisles just mentioned, which accommodate the container units, narrower passages are provided at the replenishing faces of the shelves, in which the supply equipment 10, can move. The supply equipment 10 consists of the normal stackers with elevator standards that can be guided overhead by individual tracks of the kind already described and numbered 7, as well as

30 by guide rollers 12 below (Figure 2), which run along rails 11. Similar rails and guide rollers may also be used as shown in Figure 2, for the collective container units.  
The shelving should preferably be fitted with

40 rails 13, sloping downwards from the supply side to the discharge side. This enables the storage bins 14 to be run to the discharge side without special assistance.  
The bins should preferably have collapsible

45 walls so that when empty, the attendant can simply withdraw them and dump them in a suitable place.  
Figure 2 also shows the guide rollers 15, and hoisting cable 16, for the attendant's position.

The crane track 17 (Figure 1a) running past the ends of the rows of shelves carries traversing trolley 18, with its running rollers, 19. Several lengths of girdering 20 are secured to the traversing trolley. The ends of the guide sections, as well as the ends of the individual track rails, are provided with locking mechanisms, but these are not individually illustrated.

60 There are further individual tracks 21, running from the crane track on the side that faces away from the shelves. The tracks 21 serve those positions in the main stores hall where the goods are to be further sub-divided. As has already been mentioned belt conveyors 22 can also be installed here, to take the goods from the container units at the end of their run. For this purpose, telescopic container trolleys such as that shown in Figure 3 may advantageously be used. This consists of telescope 23, in the form of a guide, with associated trolley 24. Figure 2 shows telescopic guide 23 as being fitted at the top of that side of the attendant's position which is nearest to the trolley.

75 In practice, after the goods have been collected from shelves 9, the distribution unit is run on to one of the girders sections of the traversing trolley. The traversing trolley is then moved so that it can receive an empty unit from the discharge side. A further movement next brings the full unit to the discharging position, after which another movement of the traversing trolley takes the empty unit back to the aisle between the shelves.

#### WHAT WE CLAIM IS:—

1. A shelf distribution unit having as its distinguishing feature a collecting unit comprising a column of shelves provided with two track rails on either side for guiding and hoisting an attendant's cradle and means for traversing the collecting unit.

2. A shelf distribution unit, substantially as hereinbefore described and illustrated in the accompanying drawings.

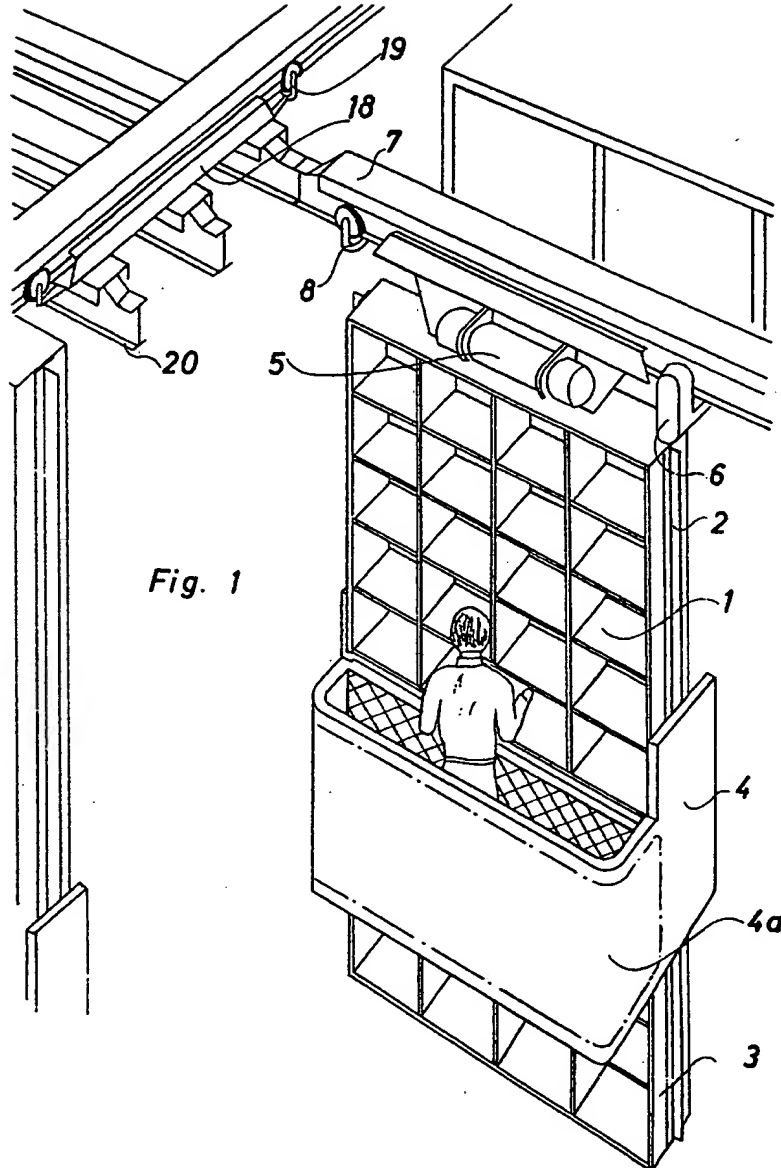
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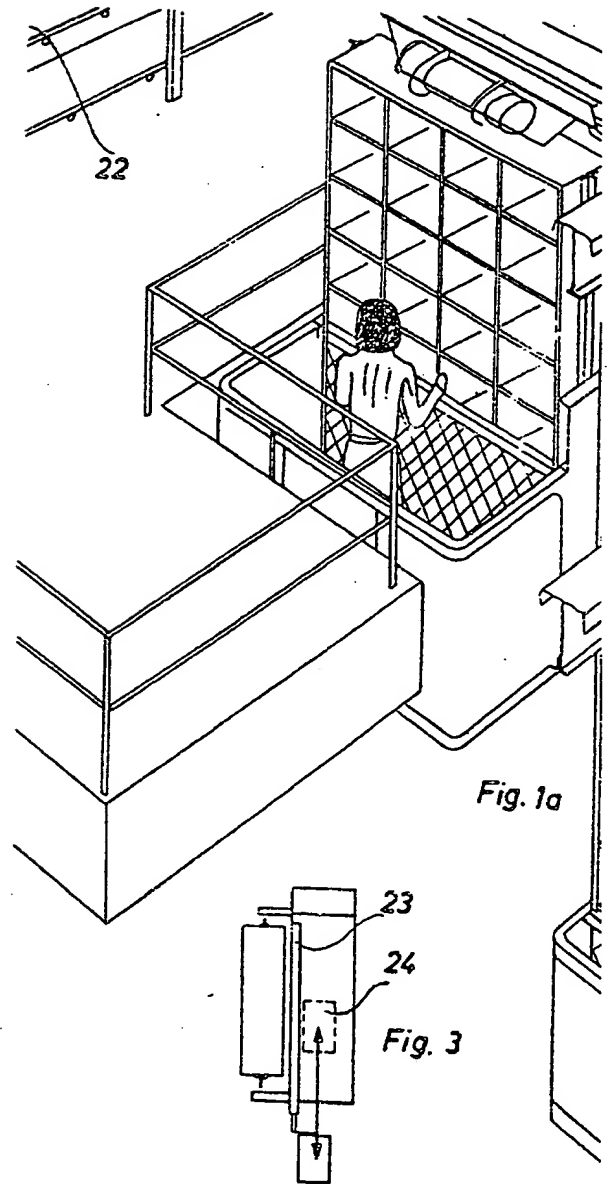
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3 SHEETS

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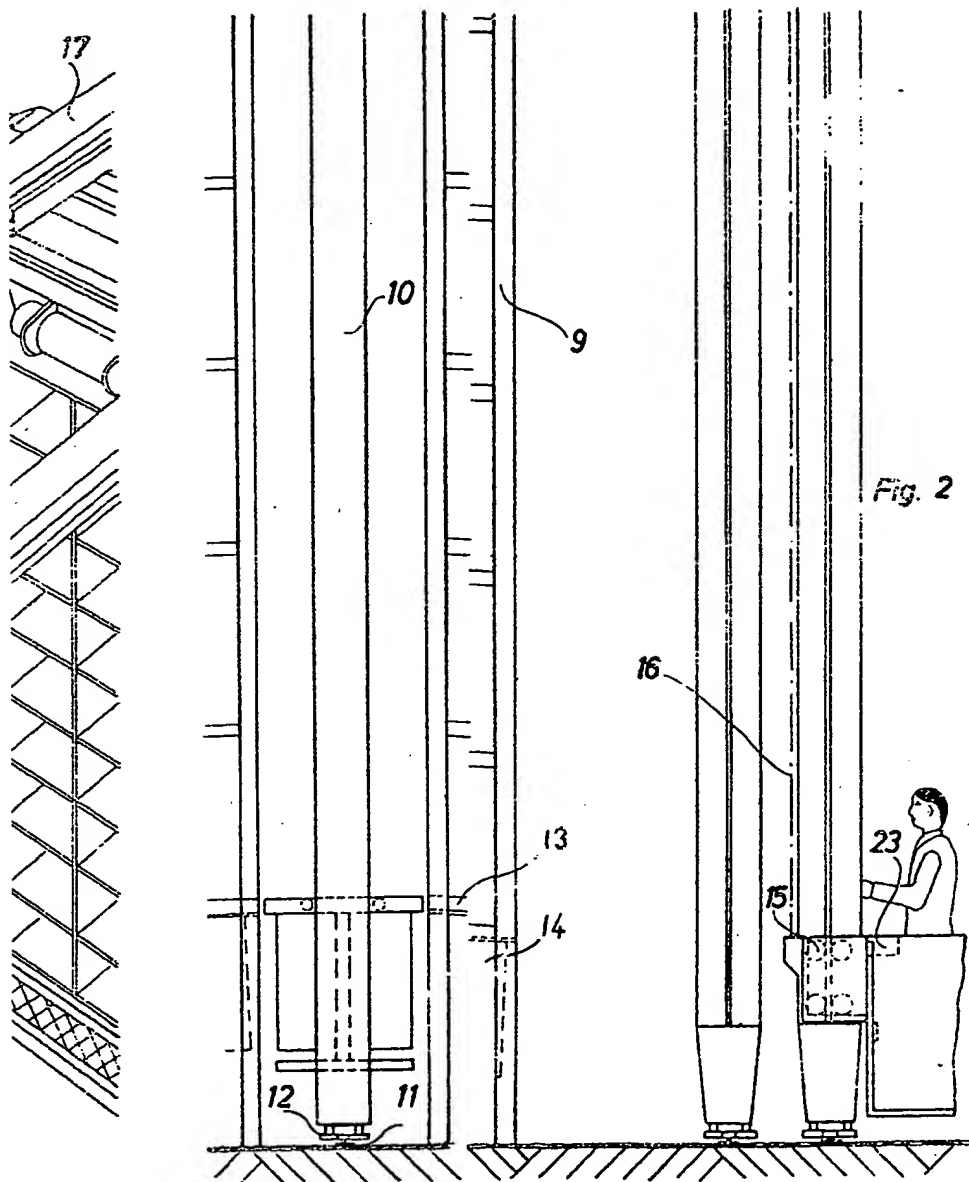


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